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Census standardizes surveys

Division's Unix system streamlines data collection and number crunching

By Patricia Daukantas
GCN Staff

From the STEPS main menu, Census Bureau economic analysts can run data processing tools, change parameters or seek online help by clicking on an icon.

The Census Bureau's Economic Directorate has made big strides toward standardizing the way its 110 national surveys are processed.

The Standard Economic Processing System now handles almost half of the periodic surveys that take the pulse of the U.S. economy, development chief Deborah Lee Tasky said.

The generalized Unix system, written with software from SAS Institute Inc. of Cary, N.C., will eliminate redundant programming efforts and streamline the capture and processing of survey results.

Because the programmers and analysts formerly were organized by survey subject matter, different groups evolved their own processing methods over the years, said H. Ray Dennis, an assistant division chief in the bureau's Economic Statistical Methods and Programming Division.

"People just didn't work together," Dennis said.

Old language

By the early 1990s, the directorate was using 16 legacy survey-processing programs written in languages including Cobol, Fortran and Oracle Rdb, Tasky said. A broad reorganization effort prompted a review of data processing methods and gave birth to STEPS four years ago.

The STEPS team first organized a group of statisticians and programmers to review existing data processing methods and develop the basic requirements for STEPS. During two years of development, team members met regularly with focus groups of directorate leaders and potential STEPS users.

In most economic surveys, respondents fill out paper forms and mail them to the Census Bureau's National Processing Center in Jeffersonville, Ind.

Clerical workers there enter the results into STEPS or one of the legacy processing systems. When responses fail to arrive, bureau workers either follow up by telephone or use statistical methods to impute the missing data.

To store data from the economic surveys in its central repository, STEPS uses standard data set structures. Individual analysts then apply their own parameters to customize their data analyses.

From the STEPS main menu, users click on icons to open modules of procedures. The modules let them change parameters, submit batch-processing jobs and review and correct data.

Figuring out how to assign common values to captured data was time-consuming, Tasky said. For example, the processing program for one set of surveys mandated responses using the letters A through E. In other surveys, a question asking for basically the same information required an answer of 1 for yes and 2 for no.

“One of the fields that really gave us grief was the data flag,” Tasky said. The flag lists the data’s source, whether from a mail-in survey or a follow-up phone call. Defining a standard STEPS data flag took eight months because many users wanted their own flag style chosen for STEPS.

STEPS runs on Alpha servers from Compaq Computer Corp. at the bureau’s computer center in Bowie, Md. Most STEPS users access the system from desktop computers running Microsoft Windows NT and the Reflection X Window emulator from WRQ Inc. of Seattle. Many have 17-inch monitors to display multiple graphs and tables simultaneously, said STEPS senior programmer Scott Ankers.

Developing STEPS with SAS software made financial sense because of the Census Bureau’s departmentwide SAS contract, Tasky said. “We knew we were going to write it in SAS right from the beginning. That was kind of a given,” she said.

Her team started development with SAS 6.11 and continued with Version 6.12, which is still in use. The team will skip Version 7 and migrate to Version 8 when it becomes available, she said.

The batch update program uses SAS Screen Control Language. The team also used SAS/AF to make applications interactive and SAS/Share to let multiple users access data sets simultaneously. The users have much more control over their data analysis than the legacy systems could provide, Dennis said.

Tasky said the graphics tools in SAS/Insight help analysts make better use of their time. STEPS now processes 51 annual surveys.

Tasky said she hopes to have the rest of the annual, monthly and quarterly surveys migrated by 2002.

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